Claims

[c1] 1. A method of generating a helical artifact score, the method comprising:
acquiring a set of data values;
setting a subset of the set of data values to an initial value;
after setting the subset to an initial value, filtering the set of data values; and
determining a probability of artifact presence from the filtered set of data values.

[c2] 2. The method of claim 1 further comprising generating a mask from the set of data values.

[c3] 3. The method of claim 2 wherein the set of data values represent pixels of an image and wherein the step of generating a mask further comprises identifying a set of pixels within a range of an expected uniform material value.

[c4] 4. The method of claim 3 wherein the range is + 40 CT numbers.

[c5] 5. The method of claim 3 further comprising isolating a region of the set of pixels absent visual artifacts.

[c6] 6. The method of claim 3 further comprising determining a numeric mean of the set of pixels within the range.

[c7] 7. The method of claim 6 further comprising subtracting the mean from each data value of the set of data values.

[c8] 8. The method of claim 3 further comprising steps of:
squaring each pixel of the set of pixels;
summing the squared pixels; and
dividing the summation by a mask pixel count.

[c9] 9. The method of claim 8 further comprising modifying the quotient by a scalar.

[c10] 10. The method of claim 9 further comprising determining the scalar by statistically correlating trained observers responses to a reconstructed image of the set of data values.

[c11] 11. The method of claim 9 wherein determining a likelihood of artifact presence comprises comparing the modified quotient to an artifact scale.

[c12] 12. The method of claim 11 wherein the artifact scale has a maximum of ten and a minimum of one.

[c13] 13. The method of claim 1 further comprising filtering the set of data values with a two dimensional array.

[c14] 14. The method of claim 13 wherein the filtering two dimensional array is a Hanning kernel.

[c15] 15. The method of claim 13 wherein the filtering two dimensional array has a five by five orientation.

[c16] 16. The method of claim 1 wherein the initial value is a whole number.

[c17] 17. The method of claim 1 wherein the initial value is zero.

[c18] 18. A computer-readable medium having stored thereon a computer program that, when executed by one or more computers, causes the one or more computers to:
acquire imaging data of a phantom from an external device, wherein the imaging data includes a plurality of pixels;
isolate a first set and a second set of pixels;
set one of the first set and the second set to an initial value;
thereafter, filter the imaging data;
determine a helical artifact index (HAI); and
visually display the HAI on a console.

[c19] 19. The computer readable medium of claim 18 wherein the external device is one of a CT scanner, an MRI scanner, an x-ray scanner, a PET imaging system, and an ultrasound imaging system.

[c20] 20. The computer readable medium of claim 18 wherein the phantom has a shape to simulate an anatomical region of a patient.

[c21] 21. The computer readable medium of claim 20 wherein the region includes

bone simulation.

[c22] 22. The computer readable medium of claim 21 wherein the bone simulation simulates a rib.

[c23] 23. The computer readable medium of claim 20 wherein the region includes tissue simulation.

[c24] 24. The computer readable medium of claim 18 wherein the computer program further causes the one or more computers to set the one of the first set and the second set of pixels to zero.

[c25] 25. The computer readable medium of claim 24 wherein the computer program further causes the one or more computers to determine a mean of the one of the first set and the second set of pixels.

[c26] 26. The computer readable medium of claim 25 wherein the computer program further causes the one or more computers to subtract the mean from the imaging data.

[c27] 27. The computer readable medium of claim 18 wherein the computer program further causes the one or more computers to:
square each pixel of the one of the first set and the second set of pixels;
sum the squares;
divide the sum by a number of pixels of the one of the first set and the second set of pixels; and
modify the quotient by a scalar.

[c28] 28. The computer readable medium of claim 18 wherein one of the first set and the second set of pixels includes imaging values within + 40 CT numbers of a range of an expected uniform material value.

[c29] 29. The computer readable medium of claim 18 wherein one of the first set and the second set of pixels includes pixels having no visual artifact.

[c30] 30. The computer readable medium of claim 18 wherein the computer program further causes the one or more computers to display the HAI on the console as

at least one of a histogram and a bar graph.

[c31] 31. A CT system comprising:
a rotatable gantry having an opening;
a high frequency electromagnetic energy projection source to project high frequency energy toward an object;
a scintillator array having a plurality of scintillators to receive high frequency electromagnetic energy attenuated by the object;
a photodiode array having a plurality of photodiodes, wherein the photodiode array is optically coupled to the scintillator array and is configured to detect light energy emitted therefrom;
a plurality of electrical interconnects configured to transmit photodiode outputs to a data processing system;
a computer programmed to:
acquire and process data to determine a likelihood of an artifact risk presence in a reconstructed image; and
notify an operator of the likelihood.

[c32] 32. The CT system of claim 31 wherein the likelihood is presented as a score in the range of one to ten.

[c33] 33. The CT system of claim 31 further comprising a console configured to at least display the artifact risk calculation as a visual bar graph.

[c34] 34. The CT system of claim 31 wherein the operator provides feedback to the CT system based on an evaluation of the likelihood.

[c35] 35. The CT system of claim 31 wherein the computer program is further programmed to determine the likelihood of an artifact presence by filtering the acquired data.

[c36] 36. The CT system of claim 35 wherein the computer program is further programmed to determine a standard deviation of the filtered data.

[c37] 37. The CT system of claim 36 wherein the computer program is further programmed to modify the standard deviation by a scalar.

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